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EXAMINER

MCGUTHRY BANKS, TIMA MICHELE

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Status of Claims

Claim 1 is currently amended, Claims 2 and 3 are cancelled and Claims 4 and 5 are as originally filed.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Okana et al (US 4,541,617), Zebrowski (US 2004/0083851) and Nicholson (US 4,208,388).

Applicant admits as prior art adding lime to molten metal in a steelmaking vessel via oxygen lances (page 2). Further, the independent claim is written in Jepson format, which is taken as an implied admission that the subject matter of the preamble is the prior art work of another; see *In re Fout* (213 USPQ 532, CCPA 1982). However, the admitted prior art does not teach adding from above as in Claim 1, the particle size of the lime as in Claim 1 or the flow aid material as in Claims 1, 4 and 5.

Regarding adding from above, Okana et al Fig. 1 teaches a lance structure for oxygen blowing. The blowing includes adding flux such as dolomite and quicklime in powdered form (column 1, lines 22-27). Dolomite and quicklime (high calcium lime) are types of lime materials. It would have been obvious to one of ordinary skill in the art at the time the invention

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was made to add oxygen and flux from above in the process of the admitted prior art as taught by Okane et al, since Okane et al teaches that this type of blowing promotes dephosphorization and desulfurization (column 1, lines 36 and 37).

Regarding the particle size, Zebrowski teaches a method of removing sulfur from molten iron using a calcium compound (abstract). The compounds include CaO. The mesh size is 14-500 mesh [0018]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the particle size taught by Zebrowski in the process of the admitted prior art, since Zebrowski teaches that the particle size is selected to provide the necessary activity or reactivity with the sulfur in the molten iron; when the particle size is too large it results in poor desulfurization efficiencies [0018].

Regarding the flow aid, Nicholson teaches enhancing the flowability of lime by treating with polymethylhydrogensiloxanes and polydimethylsiloxanes (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the flow aid of Nicholson in the process of the admitted prior art, since Nicholson teaches enhancing flowability for long periods of time and exposure to high humidity (column 2, lines 26-30).

Response to Arguments

Applicant's arguments filed 12 July 2010 have been fully considered but they are not persuasive. First applicant argues that there is a difference between blowing lime into a BOF molten bath where the lime interacts with supersonic O₂ jets in the molten slag and injecting lime using oxygen as a carrier gas. However, the claim does not recite that the lime is injected with a carrier gas. The Laval nozzle of Okane et al is still a lance (column 2, line 43). Second,

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applicant states that Zebrowski relates to Mg and CaO powder and is used at the hot metal desulfurization station. However, Zebrowski is not limited to ladle treatment. Finally, Zebrowski teaches treating quicklime (column 1, line 67).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMA M. MCGUTHRY-BANKS whose telephone number is (571)272-2744. The examiner can normally be reached on M-F 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/George Wyszomierski/
Primary Examiner
Art Unit 1793

/T. M. M./
Examiner, Art Unit 1793
21 July 2010